

Harnessing Untapped Potential: Using International and National Assessment Data to Inform the Transition to Next Generation Assessment Systems

National Conference on Student Assessment
June, 2014



Mark DeCandia, NSC KY

International Assessments Tested in States

- **National Assessment of Educational Progress (NAEP)**
 - <http://nces.ed.gov/nationsreportcard>
 - National Assessment Governing Board
- **Program for International Student Assessment (PISA)**
 - <http://www.pisa.oecd.org> and <http://nces.ed.gov/surveys/pisa>
 - Organization for Economic Cooperation and Development (OECD)
- **Trends in International Mathematics and Science Study (TIMSS)**
 - <http://www.timss.org> and <http://nces.ed.gov/timss>
 - International Association for the Evaluation of Educational Achievement (IEA)
- **Progress in International Reading Literacy Study (PIRLS)**
 - <http://www.pirls.org> and <http://nces.ed.gov/surveys/pirls>
 - International Association for the Evaluation of Educational Achievement (IEA)

NAEP, PISA, TIMSS, and PIRLS at a Glance Handout

NAEP, PIRLS, TIMSS, and PISA At a Glance

	State NAEP	PISA	TIMSS	PIRLS
General Information				
Assessment Name	National Assessment for Educational Progress	Program for International Student Assessment	Trends in International Mathematics and Science Study	Progress in International Reading Literacy Study
Website	http://nces.ed.gov/nationalsreportcard/	www.pisa.oecd.org	http://timss.bc.edu/	http://www.pirls.org/
Primary Purpose	Benchmark for national standards; national and state estimates of student achievement in key subjects at key grades; reports results relative to nationally established benchmarks. Designed to mirror U.S. educational objectives and curricula.	Measure how well students near the end of compulsory education are prepared for life beyond the classroom. Focuses on "yield" of education systems, or what competencies students have acquired in and outside of school and can apply to problems with real-world contexts.	Provide countries with information to improve teaching and learning in mathematics and science. Conducted every four years on a regular cycle, TIMSS is designed to measure progress in educational achievement in mathematics and science and provide empirical information about the contexts for schooling.	Provide policy-relevant information about how to improve teaching and learning and help children become accomplished and self-sufficient readers; measure trends in the associated home and school contexts for reading. Focuses on experiences learning to read at school and at home.
Subject Areas Tested	Reading, mathematics, writing, science, other subjects	Reading, mathematics, science, and problem solving	Mathematics, science	Reading
Responsible Organization	National Center for Education Statistics (NCES), National Assessment Governing Board (NAGB)	Organization for Economic Cooperation and Development (OECD)	International Association for the Evaluation of Educational Achievement (IEA)	International Association for the Evaluation of Educational Achievement (IEA)
History of Program	Began in 1969, expanded to some assessment every 4 years	Every 3 years since 2000	Every 4 years since 1995	Every 5 years, with first administration in 2001

From the Perspective of a State: Kentucky



NATIONAL ASSESSMENT
OF EDUCATIONAL
PROGRESS



Kentucky Assessments – State, National and International



How It All Fits Together



Role of NAEP State Coordinator

- National Assessment of Educational Progress (NAEP) - **Nation's Report Card**
- Point of Data Contact and General Information for all **International Assessments (TIMSS, PISA, PIRLS)**
- **NAEP TIMSS Linking Study**

Governor Beshear and Dr. Terry Holliday



NAEP on the Kentucky Website

HEADLINES

INITIATIVES

EXPLORE

Kentucky students outperform national peers in reading on Nation's Report Card; hold steady in math

11/7/2013 10:19:59 AM

Kentucky's 4th graders and 8th graders continue to outperform their peers nationally in reading and are on par or slightly below the national average in mathematics according to data released today from the 2013 National Assessment of Educational Progress (NAEP), also known as the Nation's Report Card. See [news release](#) for more information.

International Discussions

Kentucky leadership has increased emphasis on data from international assessments. These data **inform our general discussions** on Board Initiatives.

Commissioner
Kentucky Board of Education
State Education Agency
Assessment and Accountability Division
Curriculum Consultants
Instruction Consultants
District Superintendents
District Assessment Coordinators
Principals

Kentucky Leadership

- **“This is a good yardstick on how well Kentucky students measure up to students in other states and nations,”**

Education Commissioner Dr. Terry Holliday.

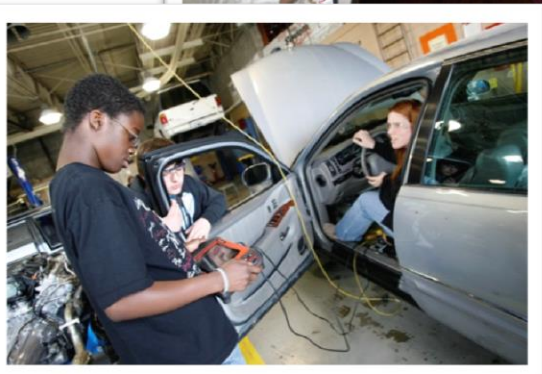
KY Press Release – October 24, 2013

Going Global

- Competition for jobs and business no longer stops at district, state or US borders.
- Our students must be able to compete globally with 21st century skills.



KY leadership recognized the importance of global competitiveness



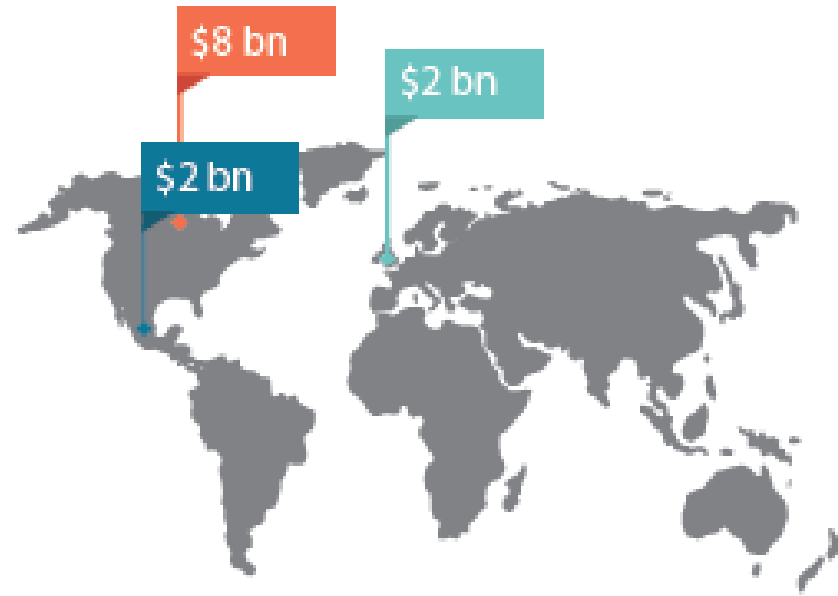
- **Legislature – Senate Bill 1 (2009)**
 - Revisions to content standards shall:
 - ...focus on critical knowledge, skills, and capacities needed for success in the global economy
 - ...consider international benchmarks
- **Commissioner/Kentucky Board of Education/Higher Ed**
 - Move goal beyond proficiency to college/career-readiness of all students graduating from high school
 - World language for college
 - Stress global literacy
- **Governor**
 - Workforce readiness to attract new business/jobs

Kentucky Values International Assessments



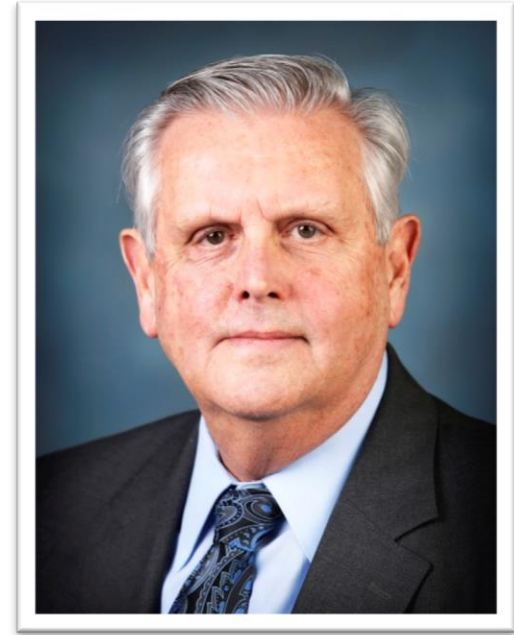
In Kentucky...

- 13% of the state Gross Domestic Product (GDP) is tied to the exports of goods



- 21% of jobs are tied to international trade (one out of every five jobs in the state)

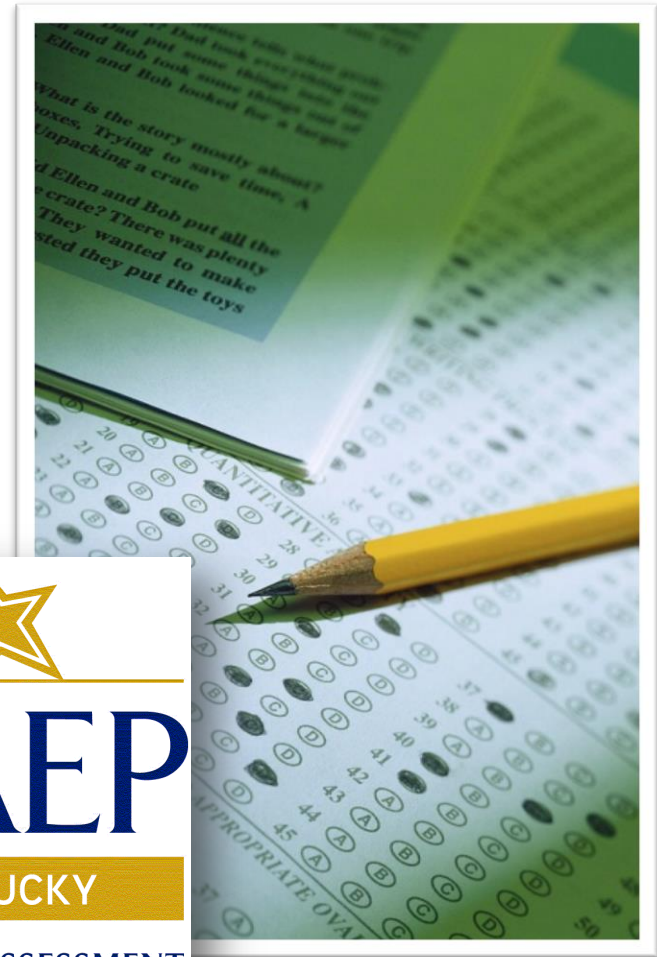
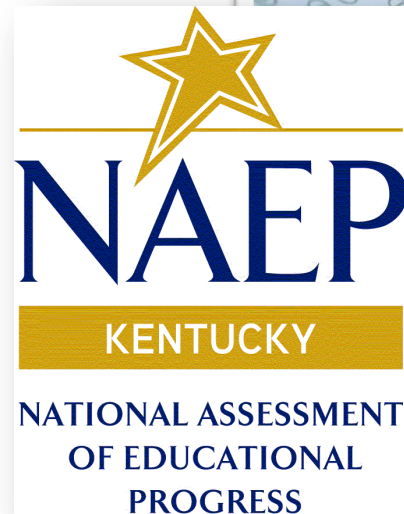
“It is critical that Kentucky prepare its students for the global competition they will face. We must have conversations about ratcheting up our game or we will fall behind other states and nations.”



--Terry Holliday, Ph.D.
Kentucky Education Commissioner

The role of assessments in Kentucky

- At home, we use the National Assessment for Educational Progress (NAEP) to see how KY students measure up against their peers across the US.



The role of assessments in Kentucky



Internationally...

- We participate in PIRLS, PISA and TIMSS.
- We evaluate US results on international assessments.
- The closest thing to a world report card that we have is the NAEP-TIMSS linking study.
- We studied and widely reported results.

NAEP-TIMSS Linking Study

Average Scores on Scale of 1-1,000

	Math	Science
KY	505	534
US	507	522
Average Score	500	500
Highest Nation (Singapore)	611	590



International Mathematics and Science

- The TIMSS math and science benchmarks indicate what 8th graders should know and be able to do in mathematics.
- **Low (400)** – Students have some knowledge of whole numbers and decimals, operations and basic graphs.
- **Intermediate (475)** – Students can apply basic mathematical knowledge in a variety of situations.
- **High (550)** Students can apply their understanding and knowledge in a variety of relatively complex situations.
- **Advanced (625)** Students can reason with information, draw conclusions, make generalizations and solve linear equations.

NAEP TIMSS Linking Study

- The nine states that participated (and paid to be in) TIMSS 2011 were Alabama, California, Colorado, Connecticut, Florida, Indiana, Massachusetts, Minnesota, and North Carolina. These states can pull data from International Data Explorer (IDE).
- Kentucky and other non-validation states received a statistical link only (estimate) of TIMSS result – free of charge. (Not on IDE).

NAEP TIMSS Linking Study – Science

PERCENTAGE OF STUDENTS SCORING AT OR ABOVE EACH BENCHMARK IN SCIENCE

Education System	Average Score ¹	Low At or above 400	Intermediate At or above 475	High At or above 550	Advanced At or above 625
Singapore ²	590	96%	87%	69%	40%
Massachusetts	567	96%	87%	61%	24%
Kentucky	534	96%	79%	43%	9%
United States ⁴	522	93%	73%	39%	9%
Ghana ³	396	22%	6%	1%	0%

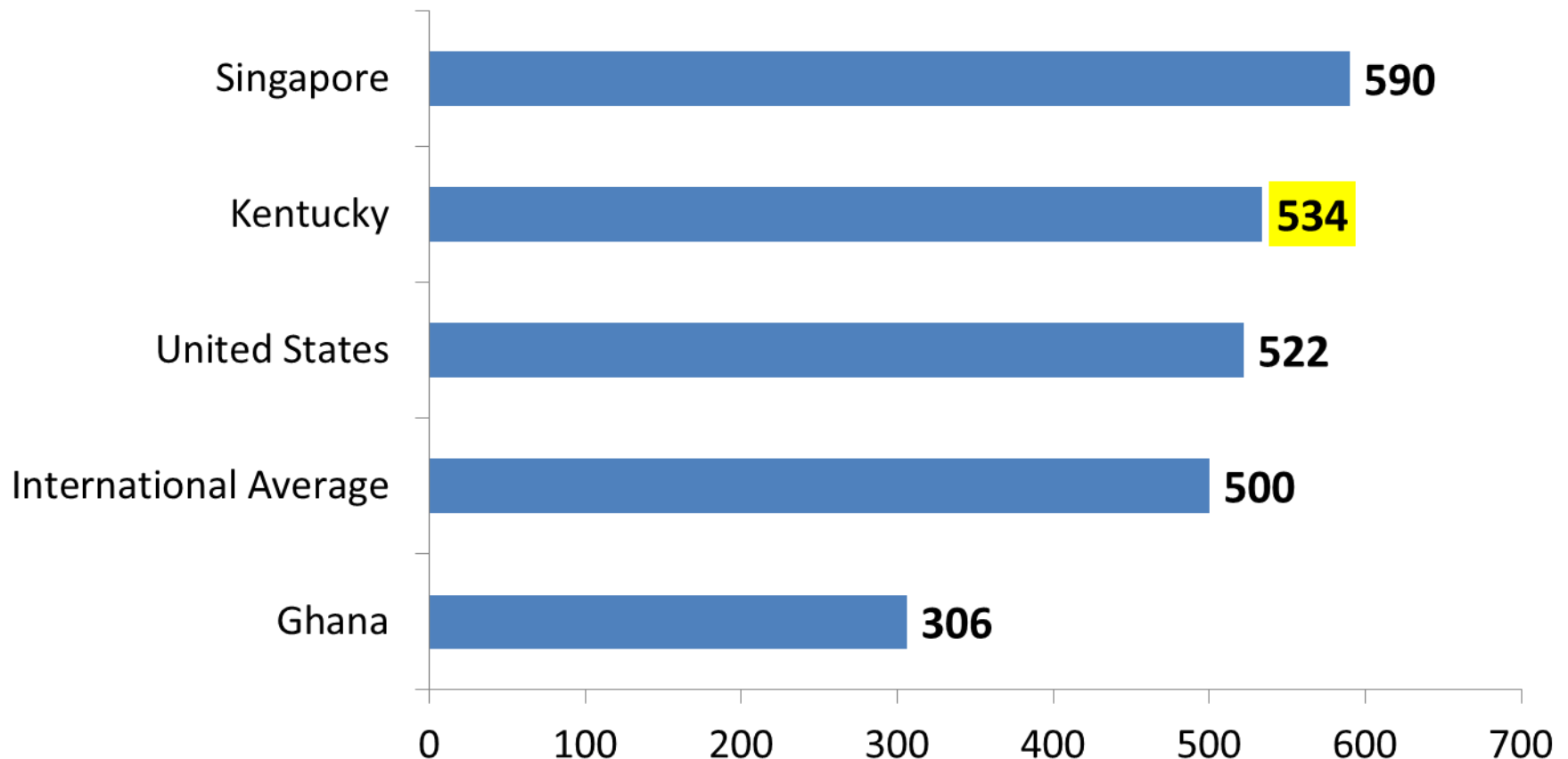
¹ On a scale of 0-1,000 ² Highest scoring country ³ Lowest scoring country ⁴ Represents public schools only

International Science

- **Kentucky's average score of 534 in science** beat not only the average of public school students in the United States (522) but also the TIMSS average score (500); that put **Kentucky in 24th place** among all the state and international education systems in the study and on par with Kansas, Michigan, Indiana, Hong Kong and England. The scores are reported on a *scale* from 0 to 1,000, with the TIMSS *scale* average set at 500.
- Singapore ranked first in science with an average score of 590; Ghana was in last place with an average score of 306. The highest scoring state was Massachusetts (567), in second place. Overall, **United States public school students ranked 31st.**

Statistically Linked Score for Science: Kentucky ranks **24th** out of 60 countries

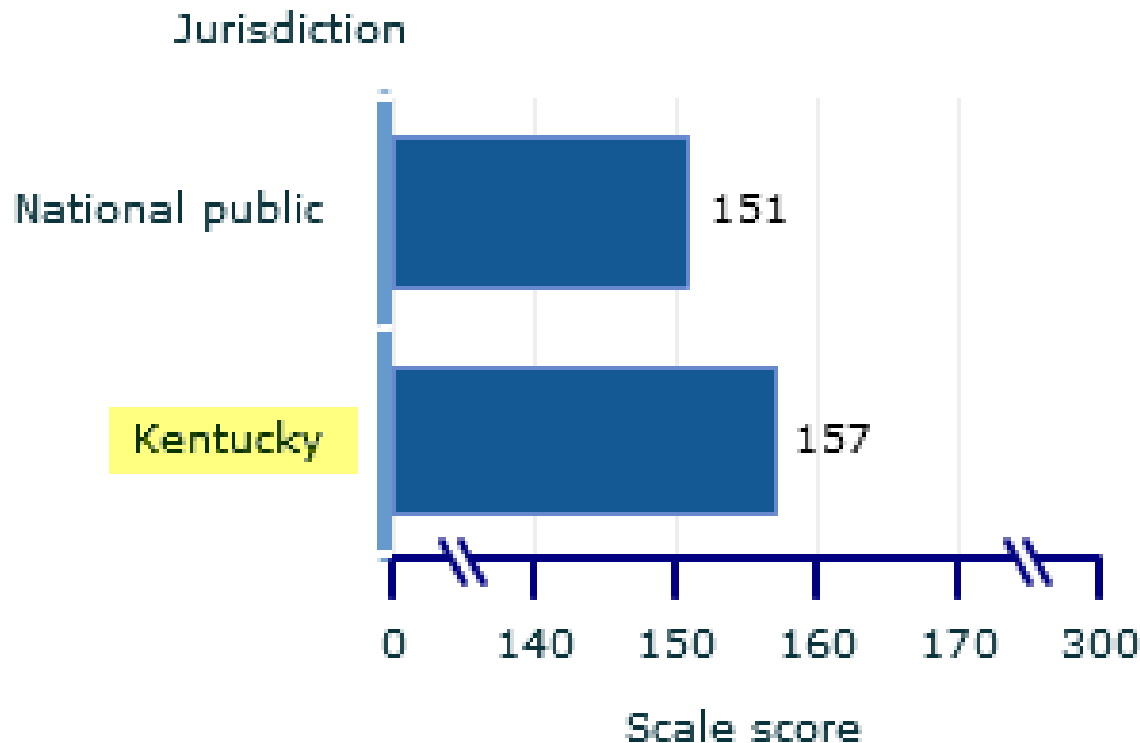
2011 TIMSS Grade 8 Science Average Scale Scores



2011 NAEP Science Grade 8 – 19th out of 52 States (including DC and DODEA)

Average scale scores for science, grade 8 by all students [TOTAL] for jurisdiction and year: 2011

2011, All students



Kentucky Leadership

- Improving our education system is important not only for those who will one day be **competing for jobs**, but also for Kentucky as we work to build a better educated workforce that can **attract higher paying jobs** and new businesses that will **secure the state's economic future.**"

Education Commissioner Dr. Terry Holliday

NAEP TIMSS Linking Study – Math

PERCENTAGE OF STUDENTS SCORING AT OR ABOVE EACH BENCHMARK IN MATHEMATICS

Education System	Average Score ¹	Low At or above 400	Intermediate At or above 475	High At or above 550	Advanced At or above 625
Korea, Republic of ²	590	99%	93%	77%	47%
Singapore	611	99%	92%	78%	48%
Chinese Taipei	609	96%	88%	73%	49%
Hong Kong	586	97%	89%	71%	34%
Japan	570	97%	87%	61%	27%
Massachusetts	561	98%	88%	57%	19%
United States ⁴	507	92%	67%	29%	6%
Kentucky	505	92%	65%	27%	5%
Ghana ³	331	22%	6%	1%	0%

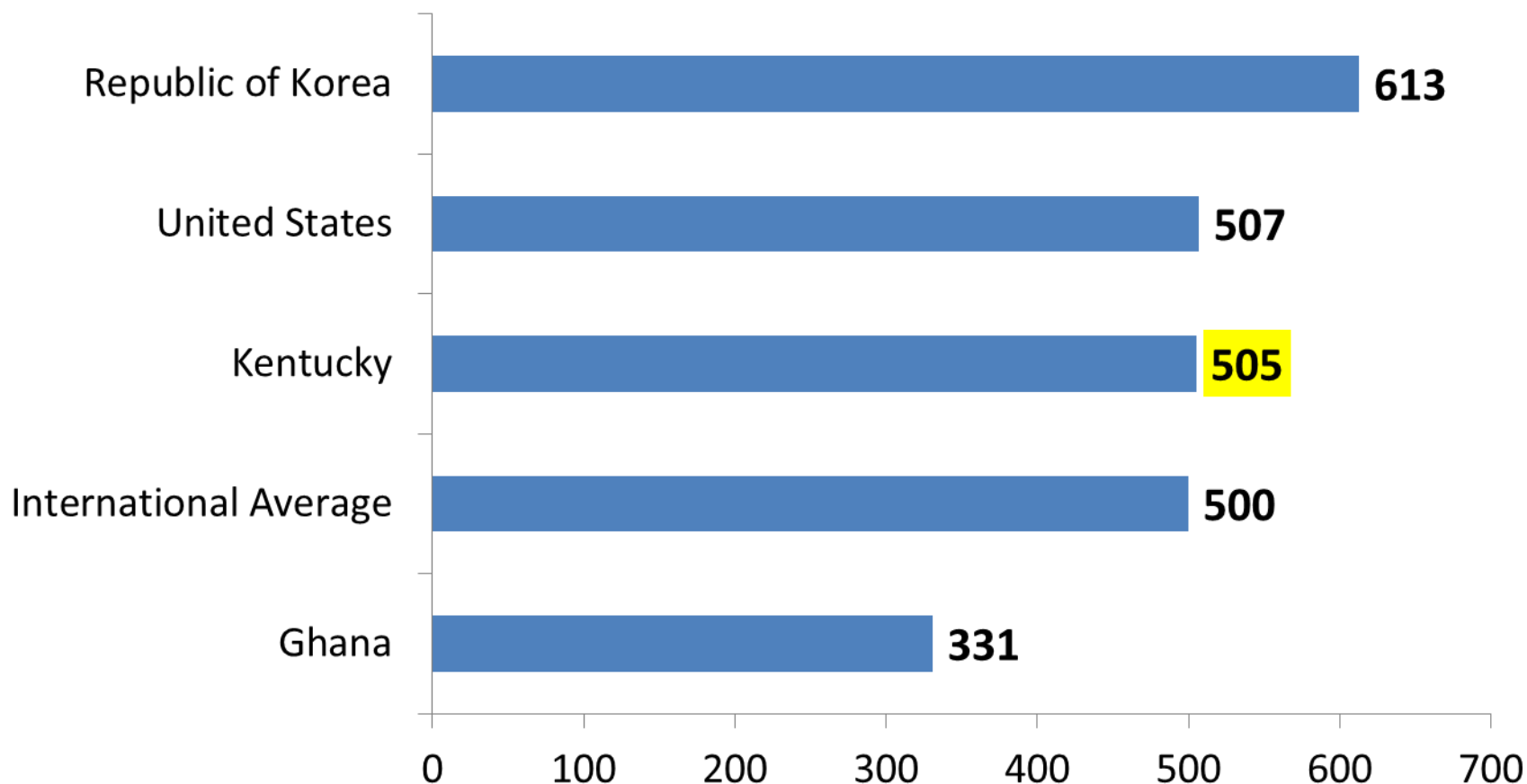
¹ On a scale of 0-1,000 ² Highest scoring country ³ Lowest scoring country ⁴ Represents public schools only

International Mathematics

- In mathematics, **Kentucky's score of (505)** put it ahead of the TIMSS average score of 500, but just below the **U.S. national average for public schools (507)**. **Kentucky's 36th place** score was comparable to the scores of Hawaii, South Carolina, England, Alberta (Canada), Hungary and Australia. The scores are reported on a *scale* from 0 to 1,000, with the TIMSS *scale* average set at 500
- Five education systems – the Republic of Korea (613), Singapore (611), Chinese Taipei (609), Hong Kong (586) and Japan (570) recorded TIMSS mathematics scores that were higher than the scores for any U.S. state. Ghana, once again, was in last place in the study with a score of 331.

Statistically Linked Score for Mathematics: Kentucky ranks **36th** out of 60 countries

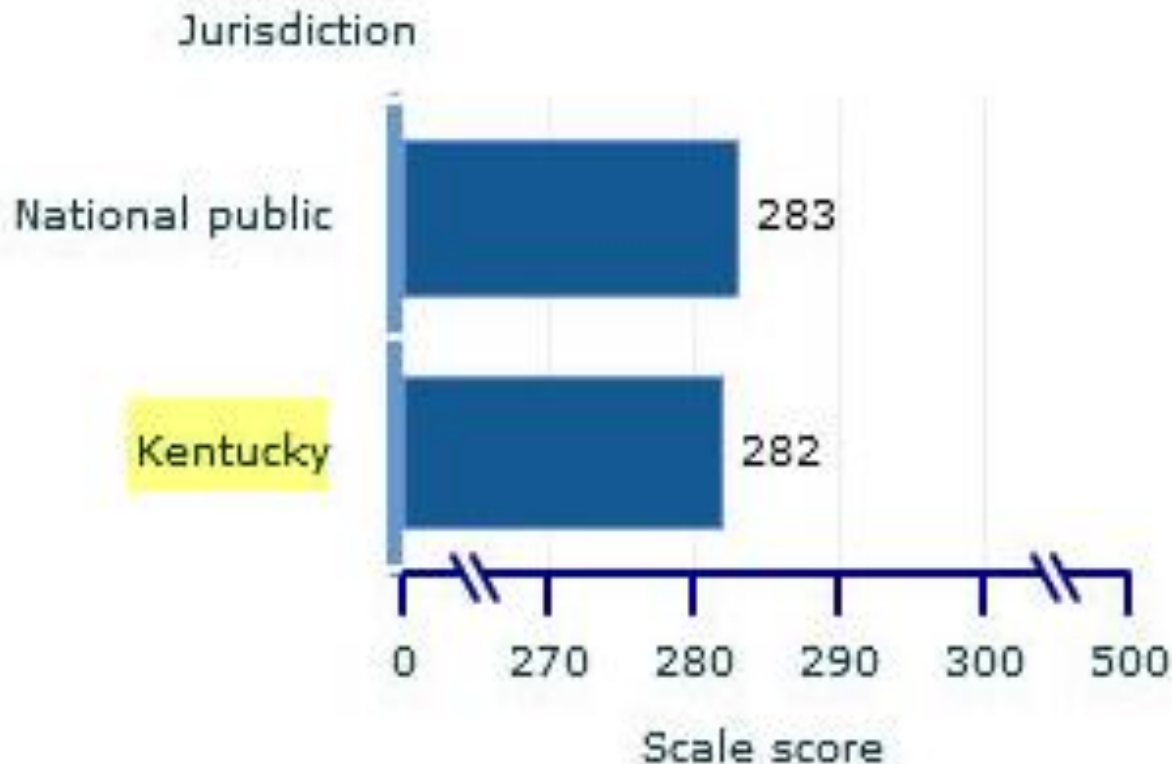
2011 TIMSS Grade 8 Mathematics Average Scale Scores



2011 NAEP Math Grade 8 – 34th out of 52 States (including DC and DODEA)

Average scale scores for mathematics, grade 8 by all students [TOTAL] for jurisdiction and year: 2011 and 2013

2011, All students



Kentucky Leadership

- “This study makes a good case for why we need more rigorous academic standards for our students.”
- “The Kentucky Core Academic Standards in English/language arts, mathematics and science focus on applied knowledge, critical thinking and problem solving – **the same skills outlined in the international benchmarks.** As our teachers become more familiar with what the standards require and build students’ mastery of them, we should see **Kentucky’s performance on global studies like this improve.**”

Education Commissioner Dr. Terry Holliday

Increasing Global Perspectives



“This is a good yardstick on how well Kentucky students measure up to students in other states and nations.

That’s important not only for those who will one day be competing for jobs, but also for Kentucky as we work to build a better educated workforce that can attract higher paying jobs and new businesses that will secure the state’s economic future.”



--Terry Holliday, Ph.D.

Kentucky Education Commissioner

Interpretations of Global Assessments

PROS

- Global Perspective Increase
- Additional data source
- Ability to analyze, report and distribute results to districts and schools
- Analyze state, national and international trend-line results
- Compare state, national and international trends
- Identify curriculum needs

Cons

- Not student data specific to school
- Accountability
- Interpretations

The impact on policy in Kentucky

- Adopted more rigorous standards that are on par with those of leading educations around the world.



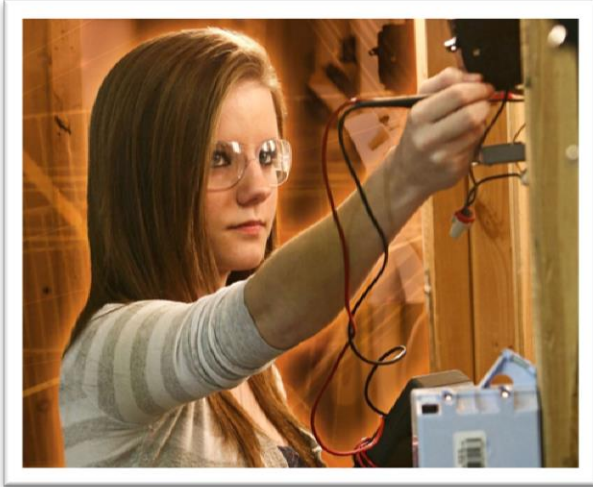
- Focus on applied knowledge, critical thinking, problem solving

The impact on policy in Kentucky



- Focus on maximizing the effectiveness of our teachers
 - More competitive entry into teacher prep
 - Better training
 - Plan to improve NAEP results
 - Evaluation model based on continuous improvement

The impact on policy in Kentucky



- Providing alternative pathways for students; aligning pathways with business demand

- Greater emphasis on formative assessments that are used to improve teaching and learning



International influence on innovation



- Kentucky is participating in the Global Education Leaders' Program (GELP)
- Purpose is to learn about educational initiatives across the globe and to discuss ways to lead innovation to ensure more students are successful.
- By participating in GELP, we are keeping Kentucky at the forefront of education not only in the US but across the globe.

Thank You!

